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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,545	11/21/2003	Takahiro Akamatsu	00862.023321	7961
5514	7590	06/28/2005	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			PHAM, HAI CHI	
30 ROCKEFELLER PLAZA			ART UNIT	PAPER NUMBER
NEW YORK, NY 10112			2861	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,545

Applicant(s)

AKAMATSU, TAKAHIRO

Examiner

Hai C. Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/21/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

3. The drawings were received on 05/13/04. These drawings are approved.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1:

- Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the

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elements. See MPEP § 2172.01. Claim 1 claims an exposure apparatus for transferring a pattern onto a substrate but only recites a circuitry for detecting the pulse beams and for reading the charges stored in the photoelectric array corresponding to the light quantity received, and thus fails to recite any structure pertinent to an exposure of the substrate.

Claim 9:

- Similarly, claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for failing to recite a structure pertinent to the exposure of the substrate.

Claim 12:

- Claim 12 recites a “device manufacturing apparatus” using an exposure apparatus. However, it is unclear regarding the final *manufactured* product the claimed device manufacturing apparatus would produce.

Claim 13:

- Similarly, Claim 13 recites a “device manufacturing apparatus” using an exposure apparatus. It is unclear regarding the final *manufactured* product the claimed device manufacturing apparatus would produce.

Claims 2-8 and 10-11 are dependent from claims 1 and 9 above, and are therefore indefinite.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-2 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurosawa et al. (U.S. 6,424,405) in view of Miyazawa (U.S. 4,584,607).

Kurosawa et al. discloses an exposure apparatus, which transfers a pattern onto a substrate (semiconductor substrate 11) by using pulse beams periodically, successively emitted by a light source (pulse laser 1) for generating a pulse beam, comprising a photoelectric array (exposure amount detector 12 or 15) for detecting pulse beams as electrical signals, and a read circuit (exposure amount calculator 102), which reads the electrical signals from the photoelectric converter.

Kurosawa et al. fails to teach the exposure amount detector having a plurality of photoelectric converters, which reads electrical signals from all the plurality of photoelectric converters by using a plurality of time intervals between the pulse beams while reading electrical signals from some of the plurality of photoelectric converters by using each time interval between the pulse beams, and the reset circuit.

Miyazawa discloses a photoelectric control system for reading the electrical signals from an array of photoelectric elements wherein the amount of charge stored in the storage unit within the array corresponds to the incident light intensity, the array of photoelectric elements being divided into a plurality of groups, wherein a plurality of

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charge accumulation and charge read out operations are carried out for a single read out operation whose output signal determines the incident light intensity, and wherein a reset is performed at the time of completion of signal reading operation.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the amount exposure detector as an array of photoelectric elements and a reset circuit in the device of Kurosawa et al. so as to read the accumulated charge as taught by Miyazawa. The motivation for doing so would have been to deliver a true output signal corresponding to the light intensity free of the dark current component as suggested by Miyazawa.

With regard to claims 7 and 8, Kurosawa et al. further discloses the exposure amount detector (15) being arranged on a stage (wafer stage 14), which holds the substrate (11), and a beam splitter (5) disposed on the optical path of the laser beam to direct a portion of the laser beam to the exposure amount detector (12) for detecting the integrated light intensity.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurosawa et al. in view of Miyazawa, as applied to claim 1 above, and further in view of Konuma (U.S. 5,650,643).

Kurosawa et al., as modified by Miyazawa, discloses all the basic limitations of the claimed invention except for the count at which charges stored in the plurality of photoelectric converters is determined in accordance with an intensity of the pulse beam.

Konuma discloses a read circuit for reading the charge accumulated in the light-receiving device using a counter (6), which counts a time duration between two reset signals to output the time duration as a numeral value, e.g., number of pulses, corresponding to the quantity of the incident light on the light receiving device.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the counter in the modified device of Kurosawa et al. as taught by Konuma. The motivation for doing so would have been to provide the capability of reading the accumulate charge even when the quantity of light is large or small while the required light sensitivity of the photoelectric element can be maintained as suggested by Konuma (see abstract).

9. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurosawa et al. in view of Konuma.

Kurosawa et al. discloses all the basic limitations of the claimed invention including the developing step being performed after the transferring step of transferring the pattern onto the semiconductor substrate (col. 13, lines 11-28), but except for the read circuit outputting a number of pulses corresponding to charges stored in the photoelectric sensor between one read operation and next read operation.

Konuma discloses a read circuit for reading the charge accumulated in the light receiving device using a counter (6), which counts a time duration between two reset signals to output the time duration as a numeral value, e.g., number of pulses, corresponding to the quantity of the incident light on the light receiving device.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the counter in the modified device of Kurosawa et al. as taught by Konuma. The motivation for doing so would have been to provide the capability of reading the accumulate charge even when the quantity of light is large or small while the required light sensitivity of the photoelectric element can be maintained as suggested by Konuma (see abstract).

Allowable Subject Matter

10. Claims 3-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 3-5 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of claim 3 is the inclusion therein, in combination as currently claimed, of the limitation with respect to the "adder which adds electrical signals read from the same photoelectric converter at different times", which is not found taught by the prior art of record considered alone or in combination.

The primary reason for the indication of the allowability of claim 4 is the inclusion therein, in combination as currently claimed, of the limitation "wherein the number of photoelectric converters from which electrical signals are read by said read circuit at

one time interval between pulses is determined in accordance with an emission frequency of the light source", which is not found taught by the prior art of record considered alone or in combination.

Claim 5 is allowable because it is dependent from claim 4 above.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

June 27, 2005